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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/580,100

05/19/2006

Kouji Waki

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EXAMINER

NGUYEN, HIEN NGOC

ART UNIT

PAPER NUMBER

3768

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/580,100	Applicant(s) WAKI ET AL.	
	Examiner HIEN NGUYEN	Art Unit 3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/19/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "The color elastic image is displayed alternatively a larger region or a smaller region than the setting physical quantity with a set hue" is confusing and indefinite. Examiner does not understand what this mean. How does the color elastic image is displayed alternatively a larger region or a smaller region than the setting physical quantity with a set hue? Examiner interprets this as a color elastic image display a larger region or a smaller region with a set hue that is base on the physical quantity.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 6 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsumura et al. (US 2006/0052702).

Regarding claims 1, 6 and 9 Matsumura discloses an ultrasonic imaging apparatus comprising:

- an ultrasonic probe that receives and sends ultrasonic waves from/to an object; (see Fig. 1, [0005] and abstract).
- ultrasound image structuring that generates an ultrasound image on the basis of a reflected echo signal received by the ultrasonic probe; (see Fig. 1, [0005] and abstract).
- elastic image structuring that obtains a physical quantity of the elasticity of the object of a region corresponding to the ultrasound image on the basis of the reflected echo signal and generates a color elastic image; (see [0005] and abstract).
- a display that overlays the ultrasound image to the color elastic image, or arranges the ultrasound image and the color elastic image and displays the resultant image on a screen; (see Fig. 3, [0005] and abstract).
- input for variably setting a corresponding relationship between a hue of the color elastic image displayed on the screen and the level of a physical quantity; (see Fig. 6-7, [0014], [0044], [0076-0079], and [0097-0098]).

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- the color elastic image is displayed alternatively a larger region or a smaller region than the setting physical quantity with a set hue; (see [0014], [0044] and Fig. 3-9).
- a calculating processor that calculates a physical quantity of the elasticity of the object of a region corresponding to the ultrasound image on the basis of the reflected echo signal; (see Fig. 1 (37 and 38), [0005], [0014] and [0044]). Matsumura discloses using input to variably set image color ([0103]). When using input to set image color the color conversion table gets rewritten.
- a color conversion table that is rewritable and set a relationship between the level of the physical quantity and the color of the color elastic image; see Matsumura's Fig. 1 (39), [0014] and [0044]. The color conversion table is within the system.
- With respect to the color conversion table, one of ordinary skill in the art would have recognize that the system of Matsumura et al. would inherently includes such a table in order to determine and display color images. When using input to set image color the color conversion table gets rewritten.
- a color processor that read the color corresponding to the obtained physical quantity from the conversion table and generates a color elastic image indicating the distribution of physical quantities; (see Fig. 1 (39), 3 and [0022]).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-5, 7-8, 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumura et al. (US 2006/0052702) in view of Suzuki et al. (US 7,455,640).

Regarding claims 2-5, Matsumura discloses substantially all claim limitations set forth in claim 1. However, they do not disclose an ultrasonic imaging apparatus that display on the screen with a color bar for a corresponding relationship between the hue of the color elastic image and the level of a physical quantity. Suzuki discloses:

- an ultrasonic imaging apparatus that display on the screen with a color bar for a corresponding relationship between the hue of the color elastic image and the level of a physical quantity; (see Fig. 3-8 and col. 6, lines 5-24).

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- an ultrasonic imaging apparatus with the color bar, a large physical quantity and a small physical quantity are displayed with different hues and the boundary between the hue having the large physical quantity and the hue having the small physical quantity is display with another hue; (see Fig. 3-8 and col. 6, lines 5-24).
- the boundary between the hue having the large physical quantity and the hue having the small physical quantity is movably formed with the input; (see Fig. 3-8 (203)). The operator can move the boundary between the hue having the large physical quantity and the hue having the small physical quantity by selecting different color block in the color bar 203 in Fig. 3-8.
- a boundary region of the hue different from the hue of the periphery is settably form at an arbitrary position of the color bar with the input; (see Fig. 3-8 (203)). The operator can set the arbitrary position of the color bar for a boundary region and the periphery region by selecting a color block in the color bar 203 in Fig. 3-8.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Matsumura's apparatus to display on the screen with a color bar taught by Suzuki because the color bar provide a visual corresponding relationship between the hue of the color elastic image and the level of a physical quantity.

Regarding claim 7, Suzuki discloses:

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- the color elastic image has a peripheral region including a setting value of the physical quantity with the hue different from the hue of another region for determining of the cancer region; (see Fig. 3-8 and col. 6, lines 5-24).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Matsumura's apparatus to display a color elastic image that has a peripheral region including a setting value of the physical quantity with the hue different from the hue of another region taught by Suzuki because with different color setting for different region the examiner can easily determine the cancer region of the tissue.

Regarding claim 8, Suzuki discloses:

- the hue of the peripheral region has a tone in accordance with the level of the physical quantity for determining the elasticity modulus of the tissue by looking at the color of the image; (see Fig. 3-8 and col. 6, lines 5-24).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Matsumura's apparatus to display the hue of the peripheral region has a tone in accordance with the level of the physical quantity taught by Suzuki because by displaying hue of the peripheral region a tone in accordance with the level of the physical quantity the examiner can determine the elasticity modulus of the tissue in the peripheral region and other region by looking at the color of the image.

Regarding claim 10, Suzuki discloses:

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- the elastic image structuring display on the screen of the display a color bar indicating a corresponding relationship between the level of the physical quantity and the hue of the color elastic image, set to the color conversion table; (see Fig. 3-8 and col. 6, lines 5-24).

Regarding claims 11 and 12, Matsumura discloses:

Matsumura discloses an ultrasonic imaging apparatus comprising:

- an ultrasonic probe that receives and sends ultrasonic waves from/to an object; see Matsumura's Fig. 1, [0005] and abstract.
- ultrasound image structuring that generates an ultrasound image on the basis of a reflected echo signal received by the ultrasonic probe; (see Fig. 1, [0005] and abstract).
- elastic image structuring that obtains a physical quantity of the elasticity of the object of a region corresponding to the ultrasound image on the basis of the reflected echo signal and generates a color elastic image; (see [0005] and abstract).
- display that overlays the ultrasound image to the color elastic image, or arranges the ultrasound image and the color elastic image and displays the resultant image on a screen; (see Fig. 3, [0005] and abstract).
- the physical quantity is a strain or an elastic modulus calculated from the amount of motion of the tissue; (see [0005], Fig. 4, [0054], [0092] and [0097]),

Suzuki discloses:

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- a color bar indicating a correspondence between the hue of the color elastic image and the strain or the elastic modulus; (see Fig. 3-8, col. 6, lines 5-42).
- a character indicating the assignment of the hardness of the color elastic image is displayed around the color bar; (see Fig. 3 (203)).

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HIEN NGUYEN whose telephone number is (571)270-7031. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571)272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. N./

Examiner, Art Unit 3768

/Long V Le/

Supervisory Patent Examiner, Art Unit 3768